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Price List for Installation of Equipment. No. 15. Equipment for Scrubbing Gases

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PRICE LIST FOR INSTALLATION OF EQUIPMENT

NO. 15

EQUIPMENT FOR SCRUBBING GASES

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STATE COMMITTEE FOR CONSTRUCTION OF THE COUNCIL OF MINISTERS, USSR (GOSSTROY USSR)

PRICE LIST FOR INSTALLATION OF EQUIPMENT
NO. 15
EQUIPMENT FOR SCRUBBING GASES*

The price list for installation of equipment No. 15, "Equipment for the Scrubbing of Gases" was worked out by the Institute for Gas Scrubbing of Ministry of the Petrochemical Industry USSR and the All-Union State Special Office for Starting, Adjustment, Planning, and Design Work in the Cement Industry of the Ministry for Construction Materials USSR under the supervision of the Scientific Research Institute for the Economics of Construction of the Gosstroy USSR and was examined by the Division of Budgetary Norms and Price Structure in the organization of the Gosstroy USSR.

The present price list supercedes the Price List for the Installation of Equipment No. 15 "Equipment for the Scrubbing of Gases" approved for use from January 1969.

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*Approved by the Gosstroy USSR for Use from 1 June 1971.

TECHNICAL SECTION

1. In the Price List, 1 ton weight of the mechanical equipment is taken as the unit of measurement, and for electrostatic precipitators of the type M and ShMK — 1 ton weight of the mechanical equipment, including the weight of all lead structures.

2. The price of installation includes:

a) movement of equipment: horizontal - from a nearby storehouse to the place of installation for a distance of up to 150 m; vertical - to the designated levels;

b) expenditures for the installation of equipment within the limits of the input and output flanges of the apparatus (without gate devices);

c) lead soldering operations;

d) packing a special supply cable in the amount of 75 m with the installations of special sleeves;

e) testing of electrostatic precipitators with high voltage and testing the machinery of electrostatic precipitators in the air in accordance with the technical stipulations for the installation of gas scrubbing equipment;

f) expenditures for the installation of the supply unit APR-1M for electrostatic precipitators of the type RION (items 15-U-50* and 15-U-51*).

3. A list of the material resources not included in the price of installation is presented in Appendix 1.

4. The cost of installation advisors and helpers is presented in Appendix 2.

5. The present Price List supercedes the Price List for the Installation of Equipment No. 15 "Equipment for the Scrubbing of Gases" effective 1 January 1969 and approved by decree No. 23 of the Gosstroy USSR, 20 March 1968.

Item No.	Designation and Technical Characteristic of the equipment or forms of installation operations	Price of installation	For 1 m: Expenditures in rubles for: Basic wages	Wages for the operation of machines	Operation of machines including wages	Material resources	Labor expenditures in man hours
1	2	3	4	5	6	7	8
	Division 1. EQUIPMENT FOR ELECTRICAL SCRUBBING OF GASES						
	Group 1 Electrostatic Precipitators for Scrubbing Flue Gases						
	Vertical electrostatic precipitator, type DVPN, active cross-section in m^2:						
15-U-1*	20-50.	48.8	20.6	4.35	10.9	3	43
15-U-2*	30-60, with multiple cyclone	33.3	14.1	3.53	8	1.4	31
	Horizontal electrostatic precipitator, active cross-section in m^2:						
15-U-3*	55 type DGPN	37.7	16.1	2.14	6.58	3.79	34
15-U-4*	20, type PGD	67.1	27.7	7.16	17.1	2.96	58
15-U-5*	30-50, type PGD	47.3	22.8	2.4	7.2	2.1	48
15-U-6*	30-50 type PGD with uniflow multiple cyclone	54	22	6.25	15	1.9	46
15-U-7*	More than 50, type PGD	39.3	17.7	2.13	6.79	2.44	38
15-U-8*	20-50, type PGDS	61.6	25.7	6.4	16	2	50
15-U-9*	30, type GP	112	42.5	12	28.8	10.8	89
15-U-10*	40, type GP	91.1	45.4	3.38	8.38	5.68	75
15-U-11*	80, type GP	43.8	18.1	2.47	8.02	4.94	38
15-U-12*	30, type GK	102	41.8	12.3	28.2	2.74	87
15-U-13*	20-45, type GPK	65	27	7.1	17.4	2.5	57
15-U-14*	53, type UG	68.7	34.1	3.47	8.23	2.56	72
	Group 2 Electrostatic precipitators for catching dust from coal dryers						
	Electrostatic precipitator, vertical, single pole, single section, type UVP, active cross-section in m^2:						
15-U-20*	8 or 12	64	26.3	3.1	10.8	8.6	56
15-U-21*	10 or 16	80	33.5	5.5	16	7.8	70

Item No.	Designation and Technical Characteristic of the equipment or forms of installation operations	Price of installation	Expenditures in rubles for				Labor expenditures in man hours
			Basic wages	Wages for the operation of machines	Operation of machines including wages	Material resources	
1	2	3	4	5	6	7	8
	Group 3						
	Electrostatic precipitators for dust removal of aspirated air from technological equipment						
	Electrostatic precipitator, horizontal, type Ts, active cross-section in m^2:						
15-U-27*	8, two pole	114	58.4	1.43	5.6	9.6	95
15-U-28*	8, three pole, or 11.5, two pole	120	50	7.15	23.7	10.7	98
15-U-29*	11.5, three pole	95.5	40	6.54	18.6	8.9	90
15-U-30*	23, two pole	75.5	35.9	1.54	5.43	9	61
15-U-31*	23, three pole	45.9	22.1	0.62	2.11	6.2	42
15-U-32*	Horizontal electrostatic precipitator, type AP, active cross-section 40 m^2	59.8	24.1	6.13	14.5	4.28	51
	Group 4						
	Electrostatic precipitators for scrubbing producer, coke oven and blast furnace gas						
	Vertical electrostatic precipitor, active cross-section in m^2:						
15-U-40*	5-8, type PG, or 3.5-7.5, type SU	44.8	18	4.25	10.1	4.6	38
15-U-41*	3.5, type S	87.1	37.6	7.36	17.6	5.56	78
15-U-42*	5-7.5, type S	67.5	29	6.33	14.9	3.5	63
15-U-43*	Vertical electrostatic precipitor, type DM with 300-600 precipitation electrodes	55.8	21.4	5.22	12.5	6.8	46

Item No.	Designation and Technical Characteristic of the equipment or forms of installation operations	Price of installation	Expenditures in rubles for				Labor expenditures in man hours
			Basic wages	Wages for the operation of machines	Operation of machines including wages	Material resources	
1	2	3	4	5	6	7	8
	Group 5						
	Electrostatic Precipitators for fine scrubbing in air conditioners						
	Electrostatic precipitator, type "Rion", active cross-section in m^2:						
15-U-50*	0.6	.538	300	0.5	0.97	28.1	478
15-U-51*	1-3	203	114	0.45	0.78	9.8	223
	Group 6						
	Electrostatic precipitators for scrubbing exhaust gases in the production of sulfuric acid						
	Vertical electrostatic precipitator, active cross-section in m^2:						
15-U-60*	3.5 or 7, type KT	48.6	20.8	4.98	11.4	1.55	46
15-U-61*	3.7 or 7.4 type TsKT	61.2	27.2	5.35	13	2	56
15-U-62*	up to 5, type TsMVT	39.4	16.7	3.7	8.8	2.32	36
15-U-63*	up to 7, type M	122	56.5	6.04	15.2	11.5	106
15-U-64*	9.5, type MT	45.2	18.4	4.47	10.6	3.42	39
15-U-65*	up to 10, type ShMK	109	50	5.2	13.1	10.9	94
15-U-66*	Horizontal electrostatic precipitator, type OGP, active cross-section 8 and 16 m^2	114	42	11.8	28.5	14.9	89
	Group 7						
	Electrostatic precipitators for catchment of phosphoric acid and yellow phosphorus						
	Horizontal electrostatic precipitator, type GPF, active cross-section in m^2:						
15-U-70*	up to 10	104	40.8	11.5	26.6	8.1	77
15-U-71*	up to 25	80.9	31.4	9.4	22.8	4.92	66

Item No.	Designation and Technical Characteristic of the equipment or forms of installation operations	Price of installation	Expenditures in rubles for				Labor expenditures in man hours
			Basic wages	Wages for the operation of machines	Operation of machines including wages	Material resources	
1	2	3	4	5	6	7	8
15-U-72*	Vertical electrostatic precipitator, type ZhFP, active cross-section up to 7 m^2	63.3	26.2	4.35	13.3	4.8	56
	Group 8						
	Electrostatic precipitators for scrubbing dust from non-aggressive gases in the production of soda						
15-U-80*	Vertical electrostatic precipitator, type SMS, active cross-section up to 7 m^2	53.9	23.3	4.7	12.2	2.61	48
	Group 9						
	Electrostatic precipitators for the precipitation of carbon black from a gas black mixture						
15-U-85*	Horizontal electrostatic precipitator, type SG, active cross-section up to 15 m^2	101	37.8	10.8	26	10.5	80
15-U-86*	Vertical electrostatic precipitator, type SPM, active cross-section 8 m^2	66.8	31.8	4.1	9.9	2.84	65
	Group 10						
	Electrostatic precipitators for scrubbing dust of subliming character from gases not having corrosive components						
15-U-90*	Vertical electrostatic precipitator, type TS, active cross-section up to 6 m^2	74.3	30.5	8	19	4	64
	Group 11						
	Electrostatic precipitors for soda reclamation units						
15-U-95*	Horizontal electrostatic precipitator, type SRG, active cross-section 15-40 m^2	69.2	28.5	7.4	18	2.86	60

Item No.	Designation and Technical Characteristic of the equipment or forms of installation operations	Price of installation	Expenditures in rubles for				Labor expenditures in man hours
			Basic wages	Wages for the operation of machines	Operation of machines including wages	Material resources	
1	2	3	4	5	6	7	8
	Group 12						
	Step-up rectifying units						
15-U-100	Units of the type AFAS and AIF	215	114	1.64	3.82	17.5	230
	Division 2. EQUIPMENT FOR THE MECHANICAL SCRUBBING OF GASES						
	Group 1						
	Single cyclones						
	Cyclone of type TsN-15, diameter in mm up to:						
15-U-120	400	153	68.4	15.8	26.3	10.6	137
15-U-121	600	118	55.3	7.9	13.2	10.6	84
15-U-122	800	61.1	29.2	4.17	8.34	2.78	74
	Group 2						
	Series of cyclones						
	Cyclone of type TsN-15, series assembly with the following number and dimensions of cyclones:						
15-U-130	2 with a diameter of 650 mm or 4 with a diameter of 600 mm	46.6	24.2	2.26	4.32	1.61	49
15-U-131	3 with a diameter of 700 mm or 6 with a diameter of 650 mm	36.1	19.4	0.84	1.8	1.4	40
15-U-132	8 with a diameter of 800 mm	36.4	14.9	4.33	10	1.08	31
15-U-133	14 with a diameter of 800 mm	29.4	12.7	2.94	6.64	1.18	26
	Group 3						
	Multiple cyclones						
15-U-140	Cyclone of up to 25 elements with a diameter of 250 mm	32.2	11.9	3.34	7.78	4.17	20
15-U-141*	Cyclone with from 80 to 720 elements with a diameter of 250 and 254 mm	25.9	9.65	2.3	5.55	3.7	20

Item No.	Designation and Technical Characteristic of the equipment or forms of installation operations	Price of installation	Expenditures in rubles for				Labor expenditures in man hours
			Basic wages	Wages for the operation of machines	Operation of machines including wages	Material resources	
1	2	3	4	5	6	7	8
	Group 4						
	Centrifugal scrubbers						
15-U-148	Scrubber of type TsS-VTI with a diameter from 1300 to 1700 mm	62.4	26.4	5.4	14.2	3.93	52
	Group 5						
	Bar dust extractors						
15-U-155	Dust extractor, type MP-VTI with a diameter from 2300 to 3300 mm	55.4	22.8	4	11.5	5.3	43

APPENDIX 1

LIST OF MATERIAL RESOURCES NOT INCLUDED IN THE PRICE OF INSTALLATION

1. High voltage cable.
2. Acid-resistant materials.
3. Sand
4. Slag

APPENDIX 2

COST OF INSTALLATION ADVISORS AND HELPERS PER UNIT OF EQUIPMENT

Item number	Designation and technical characteristic of equipment	Cost of advisors and helpers in rubles	Duration of the work of advisory personnel in days	
			Senior engineer	Engineer
	Vertical single pole electrostatic precipitator with pocket precipitation electrodes, of type:			
15-U-1	DVNN 1-2x10, two section	939	10	60
"	DVNN 1-2x20 "	1295	10	88
"	DVNN 1-2x25 "	1487	20	90
"	DVNN 1-3x10, three section	1106	20	60
15-U-2	DVNN 1-2x16.5-BTs, two section with multiple cyclone in lower part	1320	10	90
"	DVNN 1-3x20-BTs, three section with multiple cyclone in lower part	1604	20	100
15-U-3	Horizontal three pole, two section electrostatic precipitator, type DGNN-55x3	1604	20	100
	Horizontal, laminar-grooved electrostatic precipitator of type:			
15-U-4	PGD-2x20, two pole, two section	939	10	60
15-U-5	PGD-3x50, type 1, three pole, single section	2325	30	150
"	PGD-4x38, type 1, four pole, single section	1821	30	110
15-U-6	PGD-3x38-PBTs, three pole, single section with uniflow multiple cyclone	1667	20	105
"	PGD-4x50-PBTs, four pole, two section with uniflow multiple cyclone	1884	30	115
15-U-7	PGD-4x50, type 1, four pole, two section	1884	30	115
	Horizontal, single section electrostatic precipitator with S-shaped precipitation electrodes, of type:			
15-U-8	PGDC-24x2, two pole	939	10	60
"	PGDC-3x50, type 1, three pole	2325	30	150
"	PGDC-4x38, type 1, four pole	1821	30	110
15-U-8	PGDS-4x50, type 1, four pole	1884	30	115
	Horizontal, three pole, two section electrostatic precipitator with laminar bar precipitation electrodes, of type:			
15-U-9	GP-30x3	1197	30	60
15-U-10	GP-40x3	1197	30	60
15-U-11	GP-80x3	1451	30	80
15-U-12	Horizontal, two section electrostatic precipitator with precipitation electrodes of frameless construction in a brick housing, type GKZO-G-IV	1723	40	90

Item number	Designation and technical characteristic of equipment	Cost of advisors and helpers in rubles	Duration of the work of advisory personnel in days	
			Senior engineer	Engineer
	Horizontal, three pole, laminar electrostatic precipitator of type:			
15-U-13	GPK-21x3, single section	919	30	40
"	GPK-42x3, two section	1324	30	70
15-U-14	Horizontal, four pole, electrostatic precipitator with S-shaped precipitation electrodes, type UT2-4-53-01	1884	30	115
	Vertical, single pole, single section electrostatic precipitator, of type:			
15-U-20	UVN-8SK	696	48	-
"	UVN-12SK	710	49	-
15-U-21	UVN-10SK	825	10	51
"	UVN-16SK	949	20	50
	Horizontal electrostatic precipitator with laminar precipitation electrodes, of type:			
15-U-27	Ts-8x2SK, two pole, single section	939	10	60
15-U-28	Ts-8x3SK, three pole, single section	1106	20	60
"	Ts-11.5x2SK, two pole, single section	773	21	34
15-U-29	Ts-11.5x3SK, two pole, two section	918	21	46
15-U-30	Ts-23x2SK, two pole, three section	800	51	-
15-U-31	Ts-23x3SK, two pole, three section	800	51	-
15-U-32	Horizontal, two pole, two section electrostatic precipitator, type AN-40x2	1106	20	60
	Vertical, single pole electrostatic precipitator with tubular precipitation electrodes, of type:			
15-U-40	PG-5.3, single section	837	10	52
"	PG-7.6 "	952	10	61
"	SU-3.6 "	949	20	50
"	SU-5.2 "	949	20	50
"	SU-7.2 "	949	20	50
15-U-41	C-3.5 "	782	10	50
15-U-42	S-5 "	939	10	60
"	S-7.2 "	1091	15	65
15-U-43	DM-316 two section	1066	10	70
"	DM-600 four section	1651	35	90
	Electrostatic precipitator with separate zones of ionization and precipitation, of type:			
15-U-50	RION-0.58 with a device for washing the electrodes with water	177	10	-
15-U-51	RION-1.4 with a device for washing the electrodes with water	266	15	-

Item number	Designation and technical characteristic of equipment	Cost of advisors and helpers in rubles	Duration of the work of advisory personnel in days	
			Senior engineer	Engineer
15-U-51	RION-2.7 with self-cleaning electrodes in an oil bath	266	15	-
	Vertical, tubular electrostatic precipitator of type:			
15-U-60	KT-3.5, single section	952	10	61
"	KT-7, two section	1320	15	83
15-U-61	TsKT-3.7, single chamber	952	10	61
"	TsKT-7.4, single chamber	1320	15	83
15-U-62	Vertical, cyclindrical, lined electrostatic precipitator, type TsMVT-4.6	949	20	50
	Vertical, two section electrostatic precipitator with lead precipitation electrodes, lead housing on a steel frame, of type:			
15-U-63	M-2.3	952	10	61
"	M-3.4	952	10	61
"	M-5.4	1282	15	80
"	M-7	1282	15	80
15-U-64	Vertical, single section electrostatic precipitator with steel precipitation electrodes steel housing, lined with acid-resistant materials, type MT-9.5	1282	15	80
	Vertical, single section, lined electrostatic precipitator, lead precipitation electrodes, of type:			
15-U-65	ShMK-2	661	10	40
"	SHMK-3	782	10	50
"	ShMK-4.5	1028	15	60
"	ShMK-5.4	1155	15	70
"	ShMK-6.6	1360	20	80
	Horizontal, four pole, single section electrostatic precipitator with bar laminar precipitation electrodes, of type:			
15-U-66	OGN-4-8	1091	15	65
"	OGN-4-16	1442	25	85
	Horizontal, ten pole electrostatic precipitator, metallic housing, lined with acid resistant materials, of type:			
15-U-70	GNF-7x9, single chamber	1651	35	90
15-U-71	GNF-22x9, two section	1749	25	110
	Vertical, single pole, single section, laminar, cigar-shaped electrostatic precipitator of type:			
15-U-72	ZhFN-4.6	1749	25	110
"	ZhFN-6.6	1749	25	110

Item number	Designation and technical characteristic of equipment	Cost of advisors and helpers in rubles	Duration of the work of advisory personnel in days	
			Senior engineer	Engineer
	Vertical, single section, tubular electrostatic precipitator with scrubbers, of type:			
15-U-80	SMS-3.5	949	20	50
"	SMS-6.2	1066	10	70
15-U-85	Horizontal, three pole, single section electrostatic precipitator with bar laminar electrodes, type SG-15x3	1091	15	65
15-U-86	Vertical, single section electrostatic precipitator with laminar electrodes, type SPM-8	825	10	51
	Vertical, two pole, tubular electrostatic precipitator, of type:			
15-U-90	TS-3.5	1091	15	65
"	TS-6	1234	20	74
	Horizontal, single section, laminar electrostatic precipitator, housing reinforced concrete, of type:			
15-U-95	SRG-15x3	1451	30	80
"	SRG-40x2	1723	40	90
15-U-141	Multiple, single section cyclone with 80 elements of diameter 254 mm of type BTs $\frac{P-254}{8x10}$	286	-	20
"	Two section, multiple cyclone with 288 elements of diameter 254 mm of type BTs $\frac{P-254}{(12x12)2}$	286	-	20
"	Four section, multiple cyclone with 440 elements of diameter 254 mm of type BTs $\frac{P-254}{(11x10)4}$	286	-	20
"	Six section, multiple cyclone with 540 elements of diameter 254 mm, of type BTs $\frac{P-254}{(9x10)6}$	303	-	25

CONTENTS

	Page
Technical Section	2
Division 1. EQUIPMENT FOR ELECTRICAL SCRUBBING OF GASES	3
Group 1. Electrostatic Precipitators for Scrubbing Flue Gases	3
Group 2. Electrostatic Precipitators for Catching Dust from Coal Dryers	3
Group 3. Electrostatic Precipitators for Dust Removal of Aspirated Air from Technological Equipment	4
Group 4. Electrostatic Precipitators for Scrubbing Producer, Coke-Oven and Blast Furnace Gas	4
Group 5. Electrostatic Precipitators for Fine Scrubbing in Air Conditioners	5
Group 6. Electrostatic Precipitators for Scrubbing Exhaust Gases in the Production of Sulfuric Acid.	5
Group 7. Electrostatic Precipitators for Catching Phosphoric Acid and Yellow Phosphorus	5
Group 8. Electrostatic Precipitators for Scrubbing Dust from Non-corrosive Gases in the Production of Soda	6
Group 9. Electrostatic Precipitators for the Precipitation of Carbon Black from a Gas Black Mixture.	6
Group 10. Electrostatic Precipitators for Scrubbing Dust of Subliming Character from Gases not Having Corrosive Components	6
Group 11. Electrostatic Precipitators for Soda Reclaiming Units	6
Group 12. Step-Up Rectifying Units	7
Division 2. EQUIPMENT FOR THE MECHANICAL SCRUBBING OF GASES	7
Group 1. Single Cyclones	7
Group 2. Series of Cyclones	7
Group 3. Multiple Cyclones	7
Group 4. Centrifugal Scrubbers	8
Group 5. Bar Dust Extractors	8
APPENDIX 1. List of Material Resources not Included in the Price of Installation	8
APPENDIX 2. Cost of Installation Advisors and Helpers per Unit of Equipment.	9